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4. (Amended) The optical recording medium as in Claim 1, wherein said polymer or a liquid crystal polymer comprises a side chain that includes a group which is photoisomerized.

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11. (Twice-Amended) An optical recording medium comprising:
at least one optical recording layer including an optical recording material that changes a state of photo-induced birefringence in response to a recording light that is externally controlled from the optical recording medium to rotate a polarization angle of the recording light, a portion of the recording layer that changes a state of photo-induced birefringence substantially acting optically as a quarter-wave plate; and
an optical reflection layer formed on one surface of said optical recording layer.

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21. (Twice-Amended) An optical recording medium comprising an optical recording layer that includes a material having at least one of a polymer or a liquid crystal polymer in which an azimuth of birefringence that is induced by a recording light externally controlled from the optical recording medium to rotate a polarization angle of the recording light changes in response to a rotation of the polarization angle of said recording light.

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22. (Twice-Amended) An optical recording method comprising:
controlling a polarization angle of a recording light emitted from a light source, the recording light externally controlled from an optical recording medium to rotate the polarization angle of the recording light;
illuminating the optical recording medium with said recording light; and
forming an optical element on the optical recording medium by the illumination, that acts substantially as a half-wave plate, having an azimuth corresponding to a polarization angle on the optical recording medium.

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26. (Twice-Amended) An optical recording method comprising:
controlling a polarization angle of a recording light emitted from a light source
the recording light externally controlled from an optical recording medium to rotate the
polarization angle of the recording light;
illuminating the optical recording medium with said recording light; and
forming an optical element on the optical recording medium by the
illumination, that acts substantially as a quarter-wave plate, having an azimuth corresponding
to a polarization angle on the optical recording medium.

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35. (Twice-Amended) An optical recording medium comprising an optical
recording layer including an optical recording material having at least one of a polymer or a
liquid crystal polymer that stores multilevel information using a light induced birefringence
that acts optically as a half-wave plate, an orientation of an azimuth of birefringence formed
by a recording light representing the multilevel information, the recording light externally
controlled from the optical recording medium to rotate a polarization angle of the recording
light.

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37. (Twice-Amended) An optical recording medium comprising an optical
recording layer including an optical recording material having at least one of a polymer or a
liquid crystal polymer that stores multilevel information using a light induced birefringence
that acts optically as a quarter-wave plate, at orientation of an azimuth of birefringence
induced by controllably rotating a polarization angle of a recording light externally from the
optical recording medium that represents the multilevel information.

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39. (Twice-Amended) An optical recording medium comprising an optical
recording layer having at least one of a polymer or a liquid crystal polymer in which an
azimuth of birefringence induced by controllably rotating a polarization angle of a recording

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light externally from the optical recording medium is multilevel-modulated and recorded in response to a rotation of a polarization angle of said recording light.

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40. (Twice-Amended) An optical reproducing method comprising:
radiating a reproducing light on an optical recording medium in which an azimuth of an optical element that acts substantially as a half-wave plate is multilevel recorded in response to a polarization angle of a recording light that is externally controlled from the optical recording medium to rotate the polarization angle of the recording light; and determining a polarization angle of the reproducing light transmitted by said optical element.

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43. (Twice-Amended) An optical reproducing method comprising:
radiating reproducing light on an optical recording medium in which an azimuth of an optical element that acts substantially as quarter-wave plate is multilevel-recorded in response to a polarization angle of a recording light that is externally controlled from the optical recording medium to rotate the polarization angle of the recording light; and determining a polarization angle reproducing light reflected from said optical element.

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46. (Twice-Amended) An optical reproducing apparatus comprising:
a reproducing light optical system for transmitting reproducing light to an optical recording medium in which an azimuth of an optical element that acts substantially as a half-wave plate is multilevel recorded in response to a polarization angle of a recording light that is externally controlled from the optical recording medium to rotate the polarization angle of the recording light; and
an analyzing unit that detects a polarization angle of reproducing light transmitted by said optical element.

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49. (Twice-Amended) An optical reproducing apparatus comprising:
 a reproducing light optical system for emitting reproducing light toward an optical recording medium in which an azimuth of an optical element that acts substantially as a quarter-wave plate is multilevel recorded in response to a polarization angle of a recording light that is externally controlled from the optical recording medium to rotate the polarization angle of the recording light; and
 an analyzing unit that detects a polarization angle of reproducing light reflected by an optical reflection layer and transmitted by said optical element.

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52. (Twice-Amended) An optical recording and reproducing apparatus comprising:
 a light source that generates a recording light;
 a polarization rotary device that rotates a polarization angle of said recording light;
 a focusing optical system that irradiates an optical recording medium with said recording light obtained from said polarization rotary device;
 a reproducing light optical system that irradiates said optical recording medium with reproducing light; and
 an analyzing unit that detects a polarization angle of reproducing light acted on by said optical recording medium.

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53. (Twice-Amended) A method for optically recording and reproducing information, comprising:
 controlling a polarization angle of a recording light emitted from a light source, the recording light controlled externally from an optical recording medium to rotate the polarization angle of the recording light;

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illuminating the optical recording medium with said recording light;
forming an optical element on the optical recording medium by the
illumination having an azimuth corresponding to a polarization angle on the optical recording
medium;

radiating reproducing light on the optical recording medium; and
determining a polarization angle of reproducing light acted on by said optical
element.

54. (Twice-Amended) A device for optically recording and reproducing
information, comprising:

controlling means for controlling a polarization angle of a recording light
emitted from a light source, the recording light controlled externally from an optical recording
medium to rotate the polarization angle of the recording light;

forming means for forming an optical element on the optical recording
medium by the illumination having an azimuth corresponding to a polarization angle on the
optical recording medium;

illumination means for radiating reproducing light on the optical recording
medium; and

determining means for determining a polarization angle of reproducing light
acted on by said optical element.

55. (Twice-Amended) An optical recording medium comprising an optical
recording layer having at least one of a polymer or a liquid crystal polymer in which an
optical element is formed by a recording light that is externally controlled from the optical
recording medium to rotate a polarization angle of the recording light, the optical element
having an azimuth of birefringence and acting on reproducing light to adjust a polarization
angle of the reproducing light by an amount greater than a difference between a polarization